

The following Listing of Claims will replace all prior versions, and listings, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A variable gain low noise amplifier, ~~amplifies the signal applied in an input terminal and outputs to an output terminal~~, comprising:

a first amplifying cell, ~~comprises including~~ including a first terminal and second terminal being connected to ~~said an~~ said output terminal, said first amplifying cell being configured to amplify a ~~amplifies said signal from an input terminal being input applied to said first terminal to high gain, and outputs output to said second terminal in a high gain mode;~~

a second amplifying cell, ~~comprises including~~ including a first terminal and second terminal being connected to said output terminal, said second amplifying cell being configured to amplify ~~amplifies~~ said signal being input applied to said first terminal of said second amplifying cell to low gain, and outputs output to said second terminal of said second amplifying cell in a low gain mode;

a selectively matching circuit, ~~comprises including~~ including a first terminal being connected to said input terminal and a second terminal being connected to said first terminal of said first amplifying cell, and said selectively matching circuit being configured to change selectively ~~changes an input impedance of said first amplifying cell, said selectively matching circuit being configured to change said input impedance to maximize a power of said signal in said high gain mode, and to minimize said power of said signal in said low gain mode;~~

a first ~~short-circuit means~~ switch being connected between to said input terminal and said first terminal of said second amplifying cell, and said first switch being configured to

~~transmit~~ transmits said signal applied to said input terminal to said first terminal of said second amplifying cell in ~~the operation of~~ said low gain mode; and

a second switch connecting said input terminal and said output terminal

~~wherein said selectively matching circuit changes said input impedance that the power transmitted to said first amplifying cell of the signal applied to said input terminal is to be maximum in the operation of high gain mode, and to be minimum of essentially zero in the operation of low gain mode.~~

2. (Currently Amended) A variable gain low noise amplifier ~~of~~ according to claim 1, further comprising a ~~short circuit means~~ third switch connected between said second terminal of said second amplifying cell and said output terminal.

3. (Cancelled).

4. (Currently Amended) A variable gain low noise ~~amplifier of claim 1, wherein~~ comprising:

a first amplifying cell including a first terminal and second terminal being connected to an output terminal, said first amplifying cell being configured to amplify a signal from an input terminal being input to said first terminal and output to said second terminal in a high gain mode, said first amplifying cell comprises including first, second, and third terminals, an amplifying element[], a resistor, and a ~~degradation~~ degeneration impedance, and wherein

~~said amplifying element, resistor and degradation impedance which are controlled the amounts of current flowed from said first terminal to said second terminal in proportion to the voltage applied to said third terminal; and~~

~~a first terminal of said amplifying element is formed to said second terminal of said first amplifying cell, said second terminal is connected with one of terminals of said degradation impedance, said third terminal is connected with one of terminals of said resistor and then formed to said first terminal of said first amplifying cell, the other terminal of said resistor is applied to the HG bias voltage of activating said first amplifying cell in an operation of high gain mode, the other terminal of said degradation impedance is grounded, and said amplifying element is connected to common mode of said second terminal;~~

a second amplifying cell including a first terminal and second terminal being connected to said output terminal, said second amplifying cell being configured to amplify said signal being input to said first terminal of said second amplifying cell and output to said second terminal of said second amplifying cell in a low gain mode;

a selectively matching circuit including a first terminal being connected to said input terminal and a second terminal being connected to said first terminal of said first amplifying cell, said selectively matching circuit being configured to change selectively an input impedance of said first amplifying cell, said selectively matching circuit being configured to change said input impedance to maximize a power of said signal in said high gain mode, and to minimize said power of said signal in said low gain mode;

a first switch being connected to said input terminal and said first terminal of said second amplifying cell, said first switch being configured to transmit said signal applied to said input terminal to said first terminal of said second amplifying cell in said low gain mode;
and

a second switch being connected between said input terminal and said output terminal.

5. (Currently Amended) A variable gain low noise amplifier ~~of claim 1, wherein~~
comprising:

a first amplifying cell including a first terminal and second terminal being connected to an output terminal, said first amplifying cell being configured to amplify a signal from an input terminal being input to said first terminal and output to said second terminal in a high gain mode;

a second amplifying cell including a first terminal and second terminal being connected to said output terminal, said second amplifying cell being configured to amplify said signal being input to said first terminal of said second amplifying cell and output to said second terminal of said second amplifying cell in a low gain mode, said second amplifying cell comprises including

a first, second, and third terminals, and[;]

a first amplifying element being configured to control ~~controlled the amounts~~
an amount of current flowed flowing from said first terminal of said second
amplifying cell to said second terminal of said second amplifying cell in proportion to
the voltage applied to said third terminal of said second amplifying cell.[;]

~~wherein the second terminal of said first amplifying element is formed to said first terminal of said second amplifying cell, and said third terminal is applied to the LG bias voltage of activating said second amplifying cell in the operation of low gain mode, and~~

~~said first amplifying element comprises~~

~~an amplifying unit connected to common mode of said third terminal; and~~

~~second and third amplifying element elements, a voltage source, and a variable voltage source, which are controlled the amounts~~ being configured to control an amount of

current ~~flowed~~ flowing from said first terminal to said second terminal in proportion to the voltage applied to said third terminal;

~~wherein said first terminal of said second amplifying element is formed to said second terminal of said second amplifying cell, said second terminal is connected to said first terminal of said first amplifying element of said amplifying unit by connecting with said second terminal of said third amplifying element, said third terminal is connected with one of the terminals of said voltage source, said first terminal of said third amplifying element is connected to the power source, said third terminal is connected to said variable voltage source, and the other terminals of said voltage source and variable voltage source are grounded;~~

a selectively matching circuit including a first terminal being connected to said input terminal and a second terminal being connected to said first terminal of said first amplifying cell, said selectively matching circuit being configured to change selectively an input impedance of said first amplifying cell, said selectively matching circuit being configured to change said input impedance to maximize a power of said signal in said high gain mode, and to minimize said power of said signal in said low gain mode;

a first switch being connected to said input terminal and said first terminal of said second amplifying cell, said first switch being configured to transmit said signal applied to said input terminal to said first terminal of said second amplifying cell in said low gain mode;
and

a second switch being connected between said input terminal and said output terminal.

6. (Currently Amended) A variable gain low noise amplifier ~~of claim 1, wherein~~
comprising:

a first amplifying cell including a first terminal and second terminal being connected to an output terminal, said first amplifying cell being configured to amplify a signal from an input terminal being input to said first terminal and output to said second terminal in a high gain mode;

a second amplifying cell including a first terminal and second terminal being connected to said output terminal, said second amplifying cell being configured to amplify said signal being input to said first terminal of said second amplifying cell and output to said second terminal of said second amplifying cell in a low gain mode;

a selectively matching circuit including a first terminal being connected to said input terminal and a second terminal being connected to said first terminal of said first amplifying cell, said selectively matching circuit being configured to change selectively an input impedance of said first amplifying cell, said selectively matching circuit being configured to change said input impedance to maximize a power of said signal in said high gain mode, and to minimize said power of said signal in said low gain mode, said selectively matching circuit comprises includes a first and second inductor inductors, a capacitor, and a switch, short-circuit means; and one of said terminals terminal of said first inductor is being connected with to said second inductor and said capacitor, the other another terminal is being connected to said short-circuit means switch of said selectively matching circuit, the other another terminal of said second inductor is being formed to be a first terminal of said matching circuit, the other another terminal of said capacitor is being formed to be a second terminal of said matching circuit, and the other another terminal of said short-circuit means is being grounded;

a first switch being connected to said input terminal and said first terminal of said second amplifying cell, said first switch being configured to transmit said signal applied to said input terminal to said first terminal of said second amplifying cell in said low gain mode;
and

a second switch being connected between said input terminal and said output terminal.

7. (New) The variable gain low noise amplifier according to claim 4, wherein said amplifying element, resistor, and degeneration impedance control an amount of current flowing from said first terminal to said second terminal in proportion to a voltage applied to said third terminal, and

a first terminal of said amplifying element is formed to connect to said second terminal of said first amplifying cell, said second terminal is connected to one terminal of said degeneration impedance, said third terminal is connected to one terminal of said resistor and to said first terminal of said first amplifying cell, another terminal of said resistor is applied to HG-bias voltage to activate said first amplifying cell in said high gain mode, another terminal of said degeneration impedance is grounded, and said amplifying element is connected to a common node of said second terminal.

8. (New) The variable gain low noise amplifier according to claim 5, wherein said second terminal of said first amplifying element is formed to connect to said first terminal of said second amplifying cell, and said third terminal of said first amplifying element is applied to the LG-bias voltage to activate said second amplifying cell in said low gain mode, and

said first amplifying element includes an amplifying unit connected to common node of said third terminal of said first amplifying element.

9. (New) The variable gain low noise amplifier according to claim 8, wherein said first terminal of said second amplifying element is formed to connect to said second terminal of said second amplifying cell, said second terminal of said second amplifying element is connected to said first terminal of said first amplifying element by connecting to said second terminal of said third amplifying element, said third terminal of said second amplifying element is connected with one terminal of said voltage source, said first terminal of said third amplifying element is connected to a power source, said third terminal of said third amplifying element is connected to said variable voltage source, and the other terminals of said voltage source and variable voltage source are grounded.